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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/615,971	07/14/2000	Hai Tao	SAR 13476	6542

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EXAMINER
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NAKHJAVAN, SHERVIN K

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/615,971

Applicant(s)

TAO ET AL.

Examiner

Shervin Nakhjavan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-14 and 18 is/are rejected.
- 7) ☒ Claim(s) 5-7 and 15-17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_\_

***Response to Arguments***

1. Applicant's arguments with respect to claims 1-4, 8-14 and 18 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 8-14 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Cham et al. (US 6,353,679).

Regarding claims 1-18, Cham teaches, limitation of claim 1, a method for tracking multiple objects in a video sequence (Column 6, Lines 42-46) comprising: selecting an initial configuration comprising a plurality of objects (Column 6, Lines 16-18, wherein the initial configuration is selected by the criteria of selecting of the starting points from the previously predicted state space data comprising plurality of points being the objects or the portions of the objects); predicting a current configuration (Column 6, Lines 10-13, where the predictor 302 predicts the current state or configuration); and computing a likelihood for the current configuration (Column 6, Lines

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the predicted current state or configuration is computed based on the received current frame of data from the sensor);

limitation of claim 2, said predicting step comprises performing an object level prediction (Column 6, Lines 10-13, where the prediction is based on hypothesis points corresponding to objects);

limitation of claim 3, said prediction step comprises performing a configuration level prediction (Column 6, Lines 31-33, where the configuration level prediction is performed when only the best modes are selected);

limitation of claim 4, said configuration level prediction handles object addition and deletion from a current configuration (Column 6, Lines 29-42, where certain modes are deleted based on i.e. selecting only the highest ten peaks for further analysis and further by constantly receiving new frame current data and the predicted current data, other peaks could be detected and added to the tracking);

limitation of claim 8, multiple objects in a video sequence are represented by said configuration comprising a plurality of modeled objects (Column 6, Lines 22-28, where the state vector  $x$  describes a model by indicating a point in state space which specifies all parameters of the object model according to column 4, Lines 35-39);

limitation of claim 9, a method of producing probability distributions of states for multiple objects in a video sequence (Column 6, Lines 8-29, where the  $p(x|z)$  is the posterior probability distribution of states) comprising: performing hierarchical sampling of at least one frame of video in said video sequence, wherein said sampling is performed in an object configuration and individual object states (Column 6, Lines 8-18,

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where hypothesis sampling of the predicted state of vectors of the object is generated from the previous frame data); and repeating said sampling for each frame in said video sequence to track objects within the video sequence (Column 6, Lines 16-33, where the sampling of the predicted states of model vectors of the objects repeated for each new frame of the video sequence inherently based on multi-hypothesis tracking algorithm)

limitation of claim 10, said object configuration represents a plurality of objects within a scene (Column 10, Line 54 through Column 11, Line 25, where the objects for tracking in this instant is the parts of the body of the man which are itemized and tracked according to multi-hypothesis algorithm);

limitations of programming claims 11-14 and 18 corresponding to method claims 1-4 and 8, respectively, are inherently taught throughout the teachings of instruction for processing images in the computer system of figure 22, (Column 20, Lines 8-27).

#### ***Allowable Subject Matter***

4. Claims 5-7 and 15-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record specifically Cham et al. does not teach *maximizing the percentage and minimizing the number* to identify an optimal current configuration of claims 5 and 15, combined with other features and elements of the claims.

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***Other prior art cited***

5. Prior art of record cited and not relied upon is considered pertinent to applicant's disclosure.

The US Patent 5,379,044 teaches multi-target tracking related to applicant's invention as claimed.

***Contact information***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shervin Nakhjavan whose telephone number is (703) 306-5916. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached at (703) 305-4706.

**Any response to this action should be mailed to:**

Assistant Commissioner for Patents  
Washington, DC 20231

**Or faxed to:**

(703) 872-9306 for *formal* communications, please mark "EXPEDITED PROCEDURE"

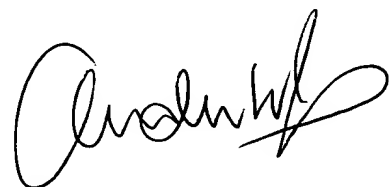
**or:**

for *informal* or *draft* communications; please label "PROPOSED" or "DRAFT".

**Hand delivered responses** should be brought to Crystal Park 2, 2121 Crystal drive, Arlington, VA, sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Tech center 2700 customer service office (703) 306-0377.

Shervin Nakhjavan *S.N.*  
Patent Examiner  
Group Art Unit 2621  
December 9, 2003.



ANDREW W. JOHNS  
PRIMARY EXAMINER